We claim:

1. A target recognition apparatus that measures a distance from a vehicle to a target, the target recognition apparatus comprising:

two cameras that are mounted on the vehicle at positions at the same height above ground level, with a predetermined distance between the cameras;

an image compressing unit that compresses an image in at least a lateral direction, for each of a left image and a right image that are input after the images are picked up simultaneously with the two cameras;

a target detecting unit that detects both ends of the target in each of the left image and the right image, based on gradations of pixels in the images that have been compressed in at least a lateral direction; and

a distance measuring unit that measures a distance to the target, based on a parallax of both detected ends of the target.

2. The target recognition apparatus according to claim 1, wherein

the image compressing unit compresses the images only a lateral direction.

3. The target recognition apparatus according to claim 1, wherein

the image compressing unit compresses the images in a lateral direction, and also compresses the images in a vertical direction at a smaller compression rate than a compression rate of the images in a lateral direction.

4. The target recognition apparatus according to claim 1, wherein

the image compressing unit compresses the images in a lateral direction, by extracting pixels of the images in a lateral direction at every predetermined plurality of pixels.

5. The target recognition apparatus according to

claim 1, wherein

the image compressing unit compresses the images in a lateral direction, by grouping pixels that continue in a lateral direction in the images into groups of pixels, each group having a predetermined plurality of pixels, and by extracting a pixel that has a maximum gradation among pixels in each group.

6. The target recognition apparatus according to claim 1, wherein

the image compressing unit compresses the images in a lateral direction, by grouping pixels that continue in a lateral direction in the images into groups of pixels, each group having a predetermined plurality of pixels, and by extracting a pixel that has a minimum gradation among pixels in each group.

7. The target recognition apparatus according to claim 1, wherein

the image compressing unit puts pixels that continue in a lateral direction in the images into groups of pixels, each group having a predetermined plurality of pixels, compresses the images in a lateral direction by setting each group as one pixel, and fixes a gradation of this one pixel as an average value of gradations of pixels in each group.

8. The target recognition apparatus according to claim 1, wherein

the image compressing unit puts pixels that continue in a lateral direction in the images into groups of pixels, each group having a predetermined plurality of pixels, compresses the images in a lateral direction by setting each group as one pixel, and fixes a gradation of this one pixel as a total sum of gradations of pixels in each group.

9. The target recognition apparatus according to claim 1, wherein

the image compressing unit puts pixels that continue in a lateral direction in the images into

groups of pixels, each group having a predetermined plurality of pixels, compresses the images in a lateral direction by setting each group as two pixels, and extracts a maximum value and a minimum value of gradations of pixels in the order of appearance in each group, as gradations of the two pixels.

10. The target recognition apparatus according to claim 1, wherein

the image compressing unit puts pixels that continue in a lateral direction in the images into groups of pixels, each group having a predetermined plurality of pixels, compresses the images in a lateral direction by setting each group as two pixels, and extracts two gradations between which there is a largest change in each group, as gradations of the two pixels.

11. The target recognition apparatus according to claim 1, further comprising:

a searching area setting unit for setting a target searching area according to images that have been compressed by the image compressing unit.

12. The target recognition apparatus according to claim 11, wherein

the searching area setting unit sets a whole surface of an image as a target searching area.

13. The target recognition apparatus according to claim 11, wherein

the searching area setting unit sets a lane on which the vehicle runs as a target searching area.

14. The target recognition apparatus according to claim 11, wherein

the searching area setting unit sets an area to which the vehicle proceeds as a target searching area.

15. The target recognition apparatus according to claim 11, wherein

the searching area setting unit is setting

a target searching area based on an area in which the target detecting unit has both detected ends of a target last time.

16. The target recognition apparatus according to claim 11, wherein

the searching area setting unit sets an area in which another decision unit has decided that there is a possibility of the existence of a target, as a searching area.

17. The target recognition apparatus according to claim 1, wherein

the target detecting unit detects both ends of a target by detecting edges.

18. The target recognition apparatus according to claim 1, wherein

the target detecting unit detects a range in a lateral direction in which a variance in added values of gradations in a vertical direction is not larger than a constant value, as an existence position of a target.

19. The target recognition apparatus according to claim 1, wherein

the target detecting unit detects a position in a lateral direction at which an added value of gradations in a vertical direction exceeds a constant value, and a position in a lateral direction at which the added value is less than the constant value, as both ends of a target.

20. The target recognition apparatus according to claim 1, wherein

the target detecting unit detects a range in a lateral direction in which a variance in average values of gradations in a vertical direction is not larger than a constant value, as an existence position of a target.

21. The target recognition apparatus according to claim 1, wherein

the target detecting unit detects positions in a lateral direction at which an added value of gradations in a vertical direction exceeds a constant value whose adjacent position in a lateral direction at which the added value is less than the constant value, as both ends of a target.